

WHAT IS CLAIMED IS:

1. A process for manufacturing retroreflective printed material, the process comprising:

a) providing a composite comprising a temporary support sheet with a layer of microspheres partially embedded in the temporary support sheet such that the surfaces of the microspheres are partially exposed;

b) applying a reflecting layer on the microspheres;

c) applying a priming layer either on the partially exposed surfaces of the microspheres or on the reflecting layer;

d) transferring a printed design layer from a transfer medium with the printed design on the primer layer and separating the transfer medium without the printed design from the printed design layer; and

e) applying a binder layer on the printed design layer;

f) applying a base fabric on the binder layer and separating the temporary support sheet from the layer of microspheres, thereby creating the retroreflective printed material;

where the reflecting layer is either applied on the microsphere surface of the composite between the priming layer and the microsphere surface of the composite, or is applied on the printed design layer between the printed design layer and the binder layer.

2. The process of claim 1, where the microspheres are transparent glass microspheres.

3. The process of claim 1, where the microspheres have a diameter, and where the microspheres are partially embedded in the temporary support sheet to a depth ranging between 40% and 50% of the microsphere diameter.

4. The process of claim 1, where the temporary support sheet comprises a coating film and a backing sheet.

5. The process of claim 4, where the coating film is selected from the group consisting of a polymeric coating film, polyethylene, polypropylene, a low-density polyethylene thermo-adhesive film and an acrylic auto-adhesive film.

6. The process of claim 4, where the backing sheet is selected from the group

consisting of kraft paper and polyester film.

7. The process of claim 1, where providing a composite comprises placing the microspheres on the temporary support sheet by a process selected from the group consisting of printing, cascading, transferring and screening.

5 8. The process of claim 1, where the reflecting layer is a dielectric mirror layer applied on the microsphere surface of the composite, and where the priming layer is applied on the dielectric mirror layer.

10 9. The process of claim 1, where the reflecting layer is a light reflecting material layer applied on the printed design layer, and where the binder layer is applied on the light reflecting material layer.

10. The process of claim 9, where the light reflecting material layer is a vapor coating of a metal or thin reflective aluminum film layer applied by vacuum deposition.

15 11. The process of claim 1, where the priming layer is selected from the group consisting of a thin layer of transparent thermo-adhesive bicomponent polyurethane resin and a resin of a water polyether polyurethane dispersion.

12. The process of claim 1, where the printed design layer from a transfer medium with the printed design comprises a plurality of colors.

13. The process of claim 1, where the transfer medium with the printed design comprises a design with sublimite pigments.

20 14. The process of claim 13, where transferring a printed design comprises thermo-transferring at a temperature between 180°C and 220°C.

15. The process of claim 1, where the transfer medium with the printed design comprises a design printed on a polymer film.

25 16. The process of claim 15, where transferring a printed design comprises thermo-transferring at a temperature between 100°C and 120°C.

17. The process of claim 1, where the binder layer is selected from the group consisting of a bicomponent polyurethane resin and a thin layer of a hot-melt adhesive.

18. A retroreflective printed material made according to claim 1.

19. An article of clothing, sportswear or footwear comprising the retroreflective printed material of claim 18.

20. A retroreflective printed material comprising:

- a) a microspheres layer;
- b) a priming layer on the microsphere layer;
- c) a printed design layer on the primer layer;
- d) a binder layer on the printed design layer;
- e) a base fabric on the binder layer; and
- f) a reflecting layer;

where the reflecting layer is either between the microsphere layer and the priming layer, or is between the printed design layer and the binder layer.

21 The retroreflective printed material of claim 20, where the microspheres are transparent glass microspheres.

22. The retroreflective printed material of claim 20, where the reflecting layer is a dielectric mirror layer.

23. The retroreflective printed material of claim 20, where the reflecting layer is a vapor coating of a metal or thin reflective aluminum film layer.

24. The retroreflective printed material of claim 20, where the priming layer is selected from the group consisting of a thin layer of transparent thermo-adhesive bicomponent polyurethane resin and a resin of a water polyether polyurethane dispersion.

25. The retroreflective printed material of claim 20, where the printed design layer comprises a plurality of colors.

26. The retroreflective printed material of claim 20, where the binder layer is selected from the group consisting of a bicomponent polyurethane resin and a thin layer of a hot-melt adhesive.